

**NATIONAL HIGH MAGNETIC  
FIELD LABORATORY**

**NHMFL**

**FLORIDA STATE UNIVERSITY**

**SAFETY PROCEDURE**

**SP-4**

**TITLE: CRYOGENIC SAFETY FOR LABORATORY USERS**

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**1.0 PURPOSE**

- 1.1 This procedure establishes policy and procedure to be observed by all users of NHMFL facilities when handling cryogenic liquids.
- 1.2 The policy of the NHMFL is to provide and maintain a safe and healthful working environment. Employees and users alike shall assist in ensuring safety is not compromised. The safety and health of employees and users are the inherent responsibilities of each employee, user, management, and all levels of supervision.

**2.0 SCOPE**

This document assigns responsibilities, provides safety guidance, and defines actions to be taken in the event an accident involving cryogenic liquids occurs.

**3.0 RESPONSIBILITIES**

**3.1 USERS**

All users shall adhere to the guidance presented in this procedure.

Prior to use of any cryogenic liquids, users shall familiarize themselves with this and all other applicable documentation provided by the NHMFL. These include:

- a) DEWAR FILLING OPERATIONS, OP-4
- b) DEWAR DISK RUPTURE, SP-6
- c) LIQUID NITROGEN STORAGE TANK RELIEF DISK ACTUATION, SP-5
- d) Training materials as appropriate

All cryogenic equipment in use at the NHMFL shall be maintained in accordance with manufacturer's recommendations. Any equipment which does not meet manufacturer's operating specifications shall be removed from service.

Users shall notify the Control Room and the NHMFL Safety Coordinator immediately of any damaged equipment, accident, or abnormal situation that occurs.

**3.2 NHMFL Safety Coordinator (ex. 4-0233)**

The NHMFL Safety Coordinator shall ensure all users of cryogenic equipment have read and are familiar with the procedures delineated in section 3.1

Additionally, he shall promulgate a list of those users who are authorized for receipt of cryogenic fluids.

**ONLY THOSE USERS WHO HAVE READ APPLICABLE SAFETY PROCEDURES, ARE CERTIFIED BY THE NHMFL SAFETY COORDINATOR, AND HAVE DEMONSTRATED COMPETENCE IN THIS FIELD SHALL BE ALLOWED TO HANDLE CRYOGENIC LIQUIDS.**

### 4.0 SAFETY

#### 4.1 DISCUSSION

Cryogenic liquids pose unique hazards due to their extremely cold temperatures and ability to displace oxygen when vaporized in confined spaces. Serious injury or death can result from improper use of these liquids.

#### 4.2 POLICY

4.2.1 Only those individuals authorized by the NHMFL Safety Coordinator will receive cryogenic fluids.

4.2.2 When transferring cryogenic fluids, proper protective clothing (i.e., gloves, face shield, apron, long-sleeved garments, and closed-toe footwear) shall be worn. No sandals allowed.

Personal protective equipment is located at the dewar filling stations. If adequate gear is not available, see the Control Room Operator or the NHMFL Safety Coordinator.

4.2.3 All cryogenic equipment shall be inspected and verified safe to use prior to use.

4.2.4 Pressure relief devices shall be configured such that actuation does not present a hazard to personnel or equipment.

4.2.5 Cryogenic equipment shall be kept clean and located away from open flames or sparks because an oxygen-rich environment may form as accumulated frost (ice) evaporates from equipment.

4.2.6 Areas which could become oxygen deficient due to release of large quantities of gas (vaporized cryogenic liquids) shall be evacuated immediately and measures shall be taken to prevent further access until the area is determined habitable by competent authority.

4.2.7 All uncontrolled releases of cryogenic liquids or gasses shall be reported to the Control Room immediately.

4.2.8 Accidents involving personnel injury in the OPMD Building shall be

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reported to the Control Room Operator first, the NHMFL Safety Coordinator second, and your supervisor.

- 4.2.9 All questions concerning safety or operation of cryogenic equipment shall be directed to the NHMFL Safety Coordinator or Head Of Magnet Operations.

**IF SAFETY IS IN DOUBT, DON'T !!!!**

- 4.2.10 A heatgun shall be used to prevent the formation of ice balls on relief devices and ball valves.